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Case Studies in State of Good Repair

Defining and Measuring SGR

March 25, 2009

Agenda

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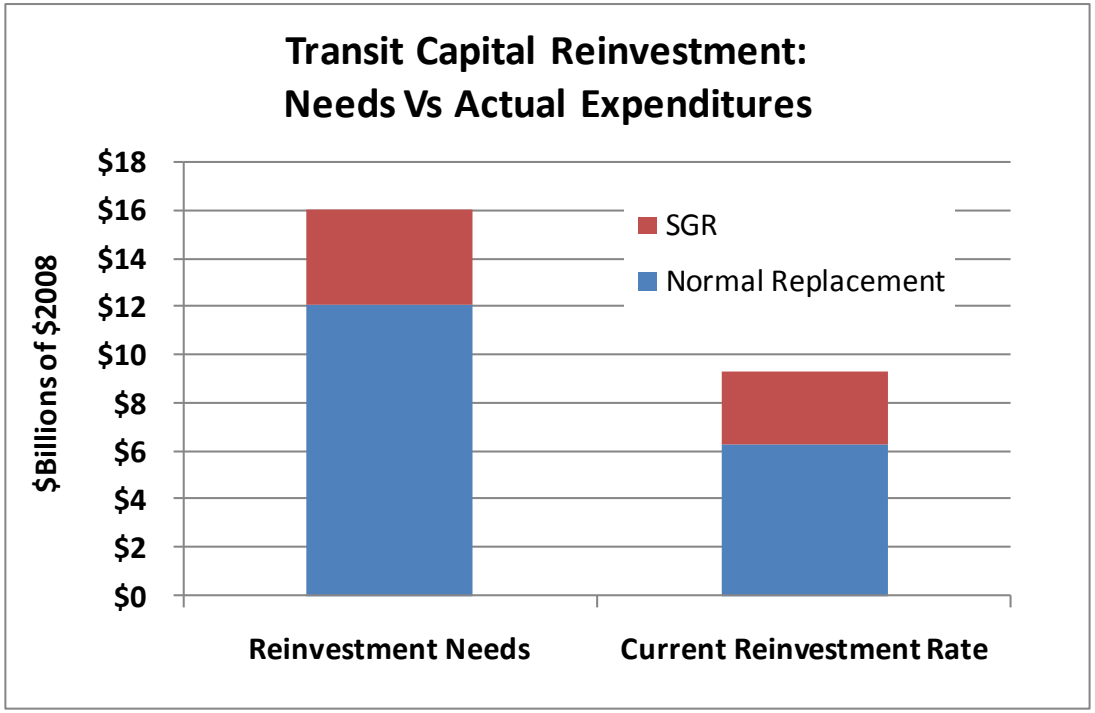
- State of Good Repair and PPPs
  - National Reinvestment Needs
  - How can PPPs Help?
  - Implementation Challenges:
    - Infrastructure Management
  - London Underground Experience

National Reinvestment Needs

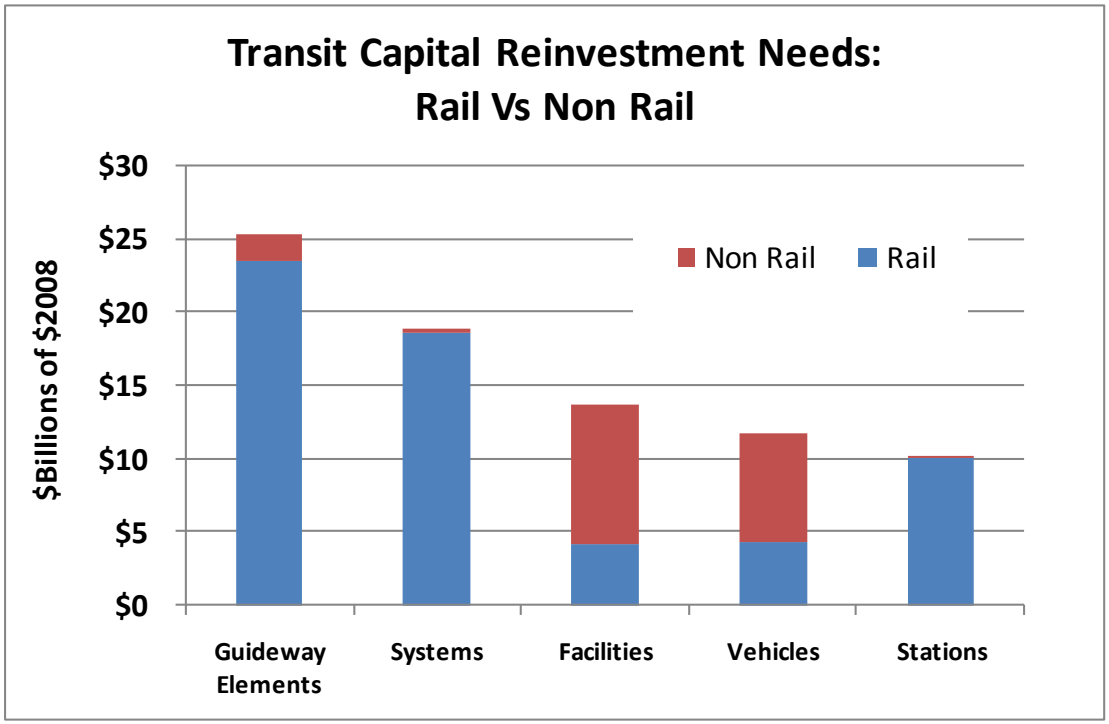
Perspective: SGR Reinvestment Needs

- An estimated $80 billion is required to bring US transit assets to a state of good repair or "SGR"
  - Once attained, an additional $12.1 billion in "normal replacement" would be required annually to maintain SGR
- Alternatively, $16.1 billion would be required annually over the next 20-years to address both SGR and normal replacement needs
- In contrast, the current annual reinvestment rate is roughly $9.3 billion
- The backlog is projected to increase



Perspective: SGR Reinvestment Needs (cont)

- Roughly $61 billion of the $80 billion SGR backlog is for rail related reinvestment needs
- Rail reinvestment needs are highest for:
  - Guideway Elements (track and structures)
  - Systems (train control, electrification, comms, fare collection)
  - Stations
- Over $50 billion of SGR needs are for the nation's largest and oldest rail systems



Potential Roles for PPPs

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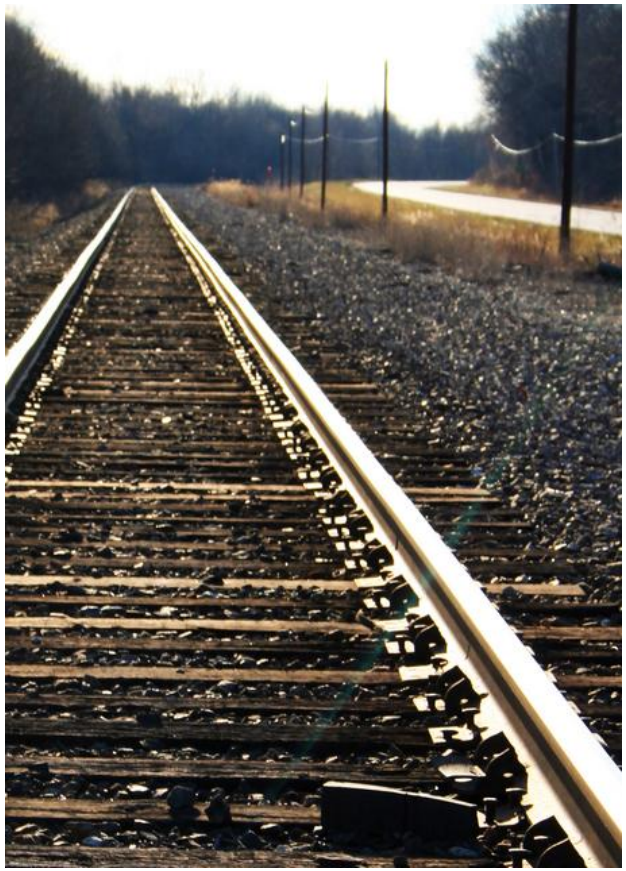
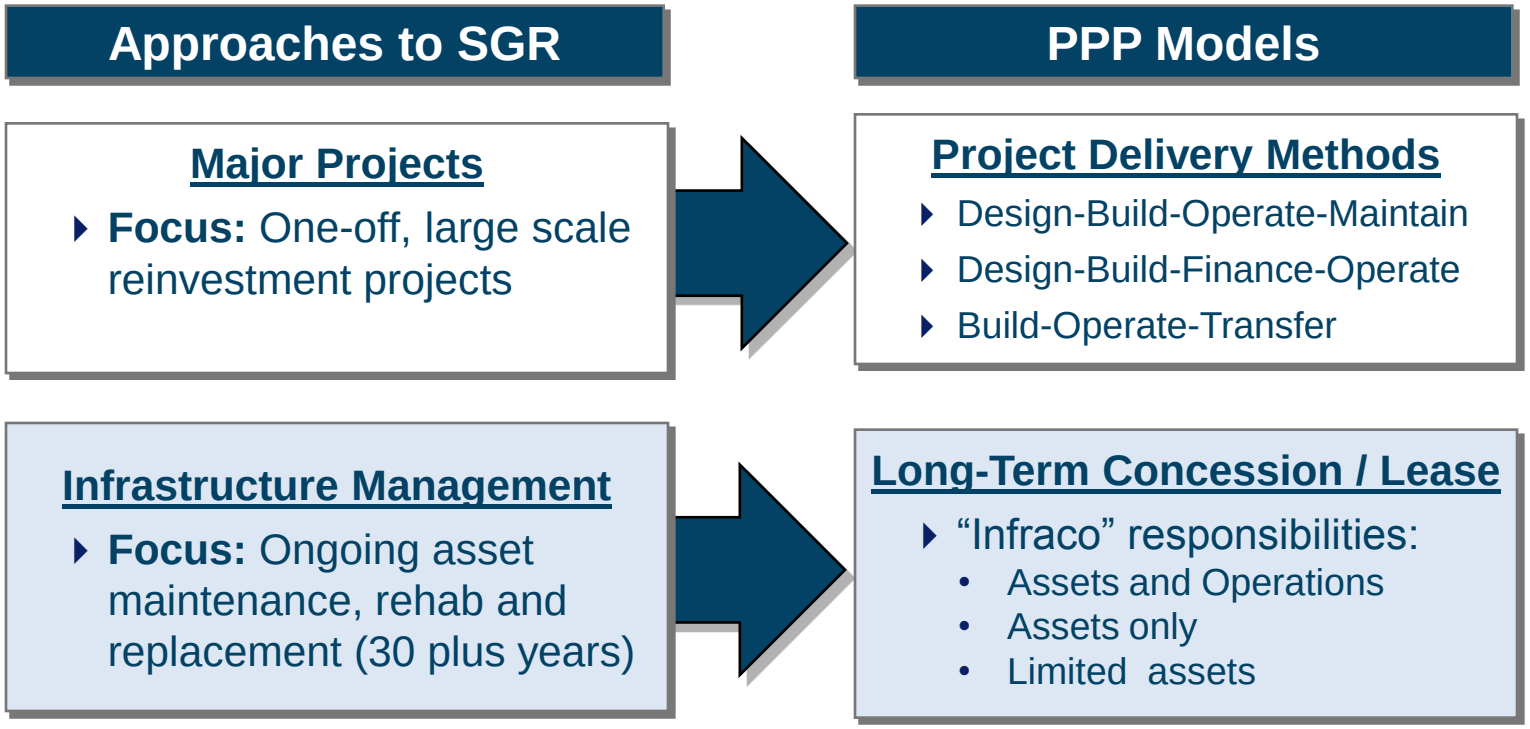
How Can PPPs Help Address SGR Needs?

- Local agencies lack the capacity to fully address the SGR backlog
- PPP's provide the potential to help:
  - "Do more with less"
  - Facilitate financing
  - Accelerate reinvestment
  - Increased accountability for performance
  - Improve responsiveness to deficiencies



How Can PPPs Help Address SGR Needs?



Remainder of this Presentation Focuses on Issues Relating to SGR and Infrastructure Management

SGR and Infrastructure Management: Challenges

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SGR and Infrastructure Management: Challenges

- Development of US Infrastructure management agreements face several key challenges:
  - Good asset data
  - State of Good repair measurement
  - Life cycle definitions / requirements
  - Valuing risks and penalties

Good Asset Data

- Prior to entering an agreement, private partners will require reliable and comprehensive asset data
- Asset Inventory Data
  - What does the agency own?
  - What condition is it in?
  - What is the remaining service life?
  - Are there plans to expand?

Without good asset data, private partners cannot accurately assess costs, risks, or returns

Good Asset Data (cont)

- Challenge: Few transit agencies currently maintain comprehensive asset inventories for capital planning purposes
  - For most that do, inventory data collection is a new practice
  - There are no standards for data content or level of detail
- In contrast, most US highway operators have maintained comprehensive pavement and bridge inventory and condition data for well over a decade

Differences between Fixed Asset Ledgers and Asset Inventories

Characteristics	Fixed Asset Ledger	Capital Asset Inventory
Purpose	Calculating depreciation for accounting purposes	Capital planning and asset management
Typical Records	Purchase contracts, past projects	Pieces of equipment to be maintained and replaced
Records aggregated by:	Date purchased	Asset type, useful life, and date purchased
Basis for Useful Life	Accounting schedules	Engineering assessments
Appropriate for Estimating Long-Term SGR Needs?	No	Yes

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SGR Measurement

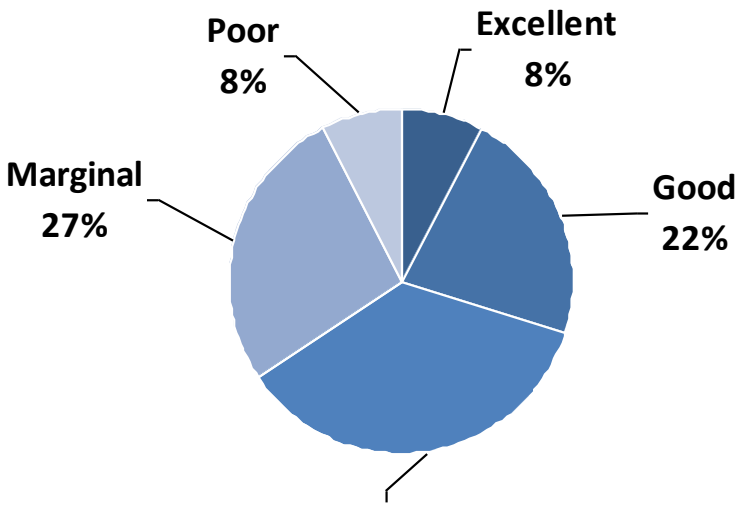
- Similarly, public partners will want assurances assets are *maintained* and *returned* in an acceptable condition
- How should SGR be measured?
  - Condition rating based?
  - Percent exceeding useful life?
  - Performance based?
    - Mean time between failures
    - Delay time
    - Availability for service
    - Customer surveys

Without reliable measures, owners cannot be assured assets are well maintained or will be returned in satisfactory condition

SGR Measurement (cont)

- Challenge: There are few commonly accepted or commonly applied measures of SGR in US transit – industry moving slowly in this direction

Condition of US Rail Assets



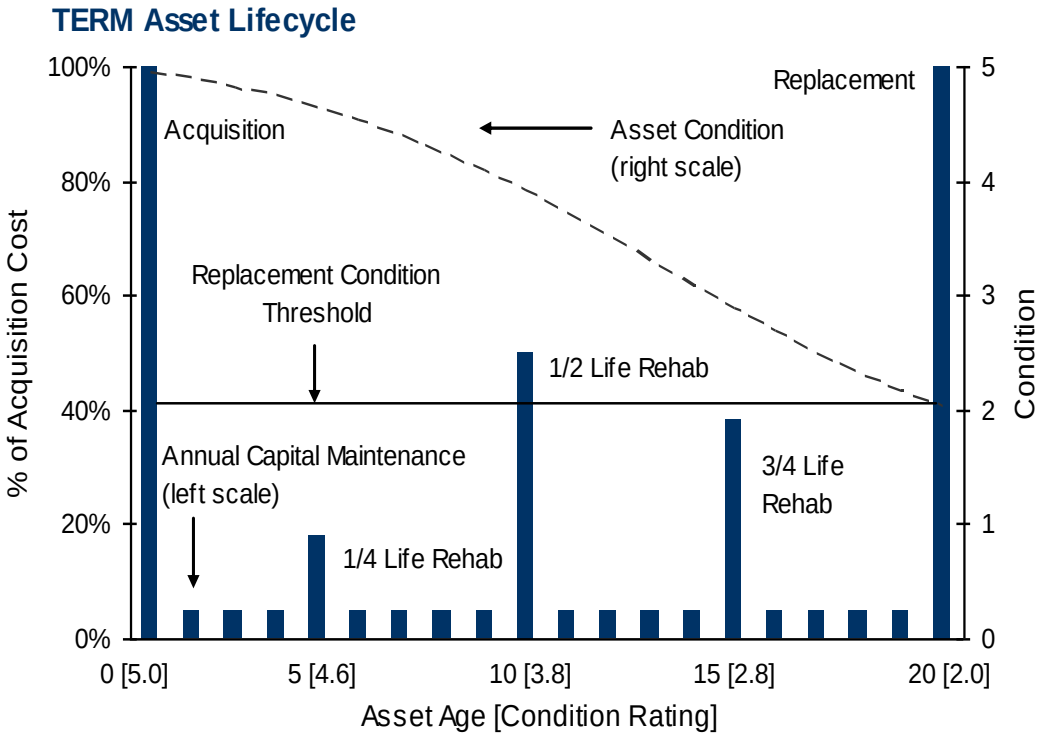
Source: TERM 2008

Percent of US Rail Transit Assets Exceeding Their Useful Life

Asset Type	TERM Estimates
Guideway Elements	
Structures	5%
Trackwork	5%-10%
Facilities	
Bus	20%
Rail (Yards & Shops)	15%
Systems	
Signals	30%
Power	5%
Communications	20%
Elevators / Escalators	15%
Stations	20%
Revenue Vehicles	25%

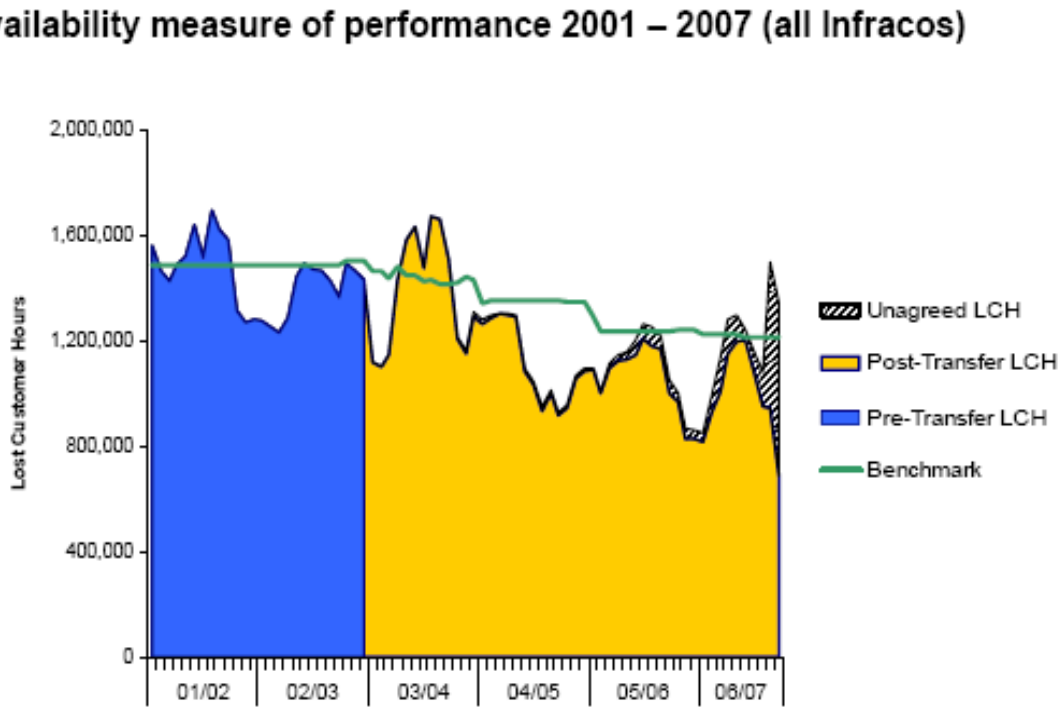
Life Cycle Reinvestment Requirements

- Public entity may require asset life-cycle reinvestment requirements are well specified
- Including the timing and extent of:
  - Preventive maintenance
  - Rebuilds / rehabs
  - Replacements
- Challenge: There are few life cycle "industry standards" for transit
  - Diverse asset types
  - Needs vary by agency, context, make and manufacturer



Performance Measures

- Alternative (or complement) to direct SGR measures or specific life cycle needs
- Provides indirect measure of asset condition based on:
  - Failure Rates
  - Passenger delays
  - Availability
  - Service Quality



Case Study: London Underground

London Underground Suffered from a History of Chronic Under-Investment

- To address this issue, in 2003 LU was broken into four parts under a PPP – including three private sector “infracos” and a public sector operating company (LU)
  - Thirty year PPP agreement
  - LU operates the rail service
  - Infracos responsible for physical assets - including trains, tracks, tunnels, signals and stations
  - Each infraco responsible for a set of rail lines (agreements based on line / location, not asset type)
  - Infracos responsible for raising funds for SGR investments
  - The timing of vehicle deliveries, station refurbishments and many other reinvestments written into PPP contract

SGR and Asset Management Under the LU PPP

- The PPP imposes a number of requirements on the Infracos:
  - Whole life cost approach Infracos must optimize asset performance over the life of the *asset*, not the life of the *contract*
    - Ensures assets are returned in good condition at the end of the contract
  - Overall good condition Infracos explicitly required to restore and manage assets to an overall state of good condition
    - Must demonstrate progressive improvement in asset health
  - Asset knowledge Infracos required to improve understanding of the link between asset condition and performance
  - Safety and service loss In managing the assets, Infracos must minimize service loss risks and safety risks.

SGR Related Performance Measurement

- Asset conditions are measured / monitored indirectly based on a range of performance measures (by location and asset type):
  - Number of failures
  - Mean time/distance between failures
  - Lost customer hours (due to failures)
  - Line capability (travel time between points in minutes)
  - Ambience of customer facing assets (based on customer surveys)
- Actual performance measures are evaluated relative to benchmarks and contractual bid-estimates
- Financial penalties for poor performance

Outcomes

- One of the London Underground “Infracos” went into receivership and cost the UK government a reported $4 billion
- Outcome result of:
  - Weak asset management practices
  - Limited application of risk based approaches to assessing and prioritizing reinvestment needs

Questions?

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